

REMARKS

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

Claim 1 has been amended to specifically recite the amount of additive element added to the positive electrode; this is supported at least at page 12, lines 21-21 and originally filed claim 10.

Claims 5-10 stand objected to under 37 CFR § 1.75(c) as being of improper dependent form. Specifically, the Office Action notes these claims include multiple dependent claims, depending from other multiple dependent claims. In response, claims 5-10 have been amended to eliminate such improper dependent form.

Claims 1-10 stand rejected under 35 USC § 103(a) as being unpatentable over EP 886334 in view of JP 07-192721. The Office Action asserts EP '334 teaches each feature of the rejected claims, except for the "positive electrode further comprises one or more of metals of Groups IIA, IIIB, IVB, VB and VI and lanthanide elements in the periodic table and compounds of these metals." The Office Action cites JP '721.

The Office Action further states in referring to JP '721 "[t]he amount of the additive element to the active material in the positive electrode is 0.1-20-mol [sic] per 100 mol of

positive active material," and such ratios encompass the present claims. Applicants respectfully submit that this is incorrect.

For example, according to Example 1 of JP '721, the active material is $\text{LiNi}_{0.5}\text{Co}_{0.5}\text{O}_2$ (97.8) and the additive is KCl (74.6). See paragraph [0018]. When the minimum amount of KCl, i.e., 0.1 mol% is added, the ppm content is 763 ppm, because $(74.6 \times 0.1) / (97.8 \times 100) = 0.000763$. Thus, even if the lowest amount of JP '721 is used, the amount of additive is outside the scope of the present claims.

The ppm contents of the other additives of JP '721, when used in the minimum content of 0.1 mol% are shown on the following table. Similarly, even the minimum contents of JP '721 are outside the scope of the present claims.

<u>Additive</u>	<u>Mol. Weight</u>	<u>ppm Content</u>
Potassium chloride (0018)	74.6	763
Potassium oxalate (0026)	166.2	1699
Potassium acetate (0027)	98.1	1003
Potassium carbonate (0028)	138.2	1413
Sodium chloride (0041)	58.4	597
Magnesium chloride (0042)	95.2	973
Copper chloride (0043)	134.4	1374
Cobalt carbonate (0054)	118.9	1216
Nickel carbonate (0055)	118.7	1214
Sodium carbonate (0056)	106.0	1084

Further, JP '721 states that, when the amount of the additive is less than 0.1 mol%, sufficient effects cannot be obtained. (See Paragraph (0010)). Accordingly, one of ordinary skill in the art would not be motivated to use less than 0.1 mol%.

Moreover, the presently claimed invention demonstrates unexpected results, as disclosed in the present specification. Specifically, JP '721 teaches to add 0.1-20 mol% of the additives to inhibit the decomposition of the electrolyte and improve the storage characteristics (see, present specification, page 2, lines 15-23; JP '721, paragraph 0070). To reiterate, JP '721 states that, when the amount of the additive is less than 0.1 mol%, sufficient effects cannot be obtained.

In contrast, the present inventors have found that when a lesser amount of the additives, i.e., less than 0.1 - 20 mol%, is added, unexpected results are obtained.

Specifically, when lesser amounts of the additives are used, changes in the surface state of the active material and increased surface area are observed (page 3, lines 6-9), the active points of the positive electrode increases (page 12, lines 25-26) and the reaction takes place easily. Thus, batteries having excellent characteristics, such as high rate and low temperature characteristics, in addition to storage characteristics, can be achieved (page 4, lines 9-10).

Additionally, since the active point increases, the present invention also causes the decomposition of the electrolyte and generates gas (page 9, line 12 - page 4, line 5; and page 19, Table 2). This feature is significantly different than that which is taught by JP '721, wherein the additive is used to inhibit the decomposition of the electrolyte. Thus, based on the teaching of JP '721, one of ordinary skill in the art would certainly not be motivated to modify the structure of JP '721 to contradict the purpose of that structure. Additionally, such effects are presented in Table 2, an excerpt of which is reproduced below (see page 19):

	Additive	Lithium imide salt	Recovery rate	Amount of gas
Battery A3	1000 ppm	No	90.9	22.8
Battery A4	1000 ppm	Yes	92.1	14.7
Battery A6*	500 ppm	Yes	98.3	6.5

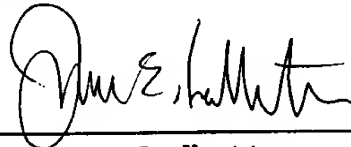
* Example of Battery of the present invention.

Thus, it can be clearly seen that the present invention provides unexpected results when compared to the closest batteries of the cited references.

In light of the foregoing, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



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